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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/526,376	03/03/2005	Yoshio Nakano	266108US3PCT	3840

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EXAMINER	
WOOD, ELLEN S	

ART UNIT	PAPER NUMBER
1794	

NOTIFICATION DATE	DELIVERY MODE
11/26/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/526,376	NAKANO ET AL.	
	Examiner	Art Unit	
	ELLEN S. WOOD	1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 August 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *9-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *9-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 9-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hochberg et al. (US 3,830,261) in view of Naito (US 5,813,704).

In regards to claim 9, Hochberg et al. disclose a hollow body, such as a metal fuel lines, which fuel flows or is contained (abstract). The Examiner notes that a bellows can be considered a metal hollow body in which Hochber et al. makes reference. Hochberg et al. disclose that the tube is encased in an inner overwrap and this overwrap is formed from strands or roving of fibrous material (col. 2 lines 37-39). The strands of fibrous material are braided over the exterior surface of the tube with the braid angle, which is the angle between crossing strands in the braid pattern, being between 10^{o} and 85^{o}. A braid angle of 25^{o} is preferred (col. 2 lines 43-47). This range falls within Applicants range claimed in claim 9. Hochberg et al. disclose a separate foam layer that is between the tube and braided overwrap (col. 5 lines 66-68). Hochberg et al. fails to disclose that the buffer material will cover the outer face of the bellows from the bottom of the troughs to a height that is 0.5 to 2.0 times the height of the ridges. It is obvious to one of ordinary skill in art at the time the invention was made that a foam material applied to a bellows with troughs and ridges would cover the

bellows from the bottom of the troughs to the ridges. The optimal vibration absorbance is desired, since it has been held that discovering an optimum value of result effective variable involves only routine skill in the art in the absence of unexpected results. *In re Boesch*, 617 F. 2d 272, 205 USPQ 215 (CCPA 1980).

In regards to claim 10, Hochberg et al. disclose the fibrous strands may be impregnated with an embedded in resinous, elastomeric, or polymeric material (col. 2 lines 51-53).

In regards to claim 11, Hochberg et al. disclose the suitable resinous and polymeric materials are epoxy, polyurethane and those listed in U.S. Pat. No. 3,586,058 (col. 2 lines 60-65).

In regards to claim 12, Hochber et al. disclose a layer of sealant material surrounds the inner overwrap (fiber braid reinforcement) (col. 2 line 66-67). The fiber braid reinforcement does not have to be impregnated, thus when a liquid sealant material is applied to a non-impregnated fiber braid reinforcement it is technically impregnated. Hochberg et al. disclose that the sealant materials are polymeric material based rubbers (col. 3 lines 5-7). Hochberg et al. fails to disclose that the rubbers are those claimed in Applicants claim 12. It is known to one of ordinary skill in the art that the rubbers claimed are polymeric material based rubbers. Thus, it is obvious to one of ordinary skill in art at the time the invention was made that the polymeric material based rubbers applied to the fiber braid reinforcement would be a rubber based that has the type of chemical resistant that implies to Applicant's invention. Applicant also claims a wide variety of rubbers, thus the importance of the rubber material is not a claim limiting

property. Examiner notes that natural rubber would not be a type of rubber used in Applicants invention due to the properties of natural rubber.

In regards to claim 13, Hochberg et al. disclose an outer overwrap is formed over the sealant layer (fiber braid reinforcement) (col. 3 lines 13-14). The outer overwrap is formed from strands or roving of high strength fibrous material (col. 3 lines 16-18). The strands of the outer overwrap are braided about the sealant layer (col. 3 lines 19-20).

In regards to claim 14, Hochberg et al. disclose the fibrous material are strands of fiber glass, dacron, rayon, nylon, graphite, and PRD-49 (col. 2 lines 37-41).

In regards to claims 17-20, Hochberg et al. disclose a separate foam layer that is between the tube and braided overwrap (col. 5 lines 66-68). Hochberg et al. disclose that the foam materials for use are natural, synthetic rubbers, and silicone and ethylene propylene rubbers (col. 5 lines 66-69 col. 6 line 1).

In regards to claims 21-28, Hochberg et al. disclose that the invention relates to an object with a hollow body, which is ideally suited for uses as a fluid line (col. 1 lines 64-66), thus it is a partially disposed in piping for a liquefied petroleum gas or liquefied natural gas.

Hochberg et al. is silent with regards to the cross section of the bellows having an S2-shapes or U-Shapes and the bellows having troughs and ridges.

Naito discloses a flexible joint that could be used in the exhaust system of an internal combustion engine (abstract). The bellows have ridges and troughs (col. 4 lines 3-4). The cross section of the bellows is in the shape of a letter "U" and in the shape of a letter "omega" (col. 4 lines 5-7). It entire wave-form can be made U-shaped or 2-

shaped in the cross section (col. 4 lines 7-8). The height of the ridge at both end parts of the bellows is made shorter than that at the intermediate part (col. 4 lines 9-12). A heat-insulating material can be constructed on top of the bellows (col. 4 lines 15-18). There is a braid that covers the bellows (col. 3 lines 57-59). The bellows of Naito would be advantageous in the structure of Hochberg, because the bellows are flexible, made of a thin metal, contain an intermediate barrier layer and have a braided layer. It would be obvious to one of ordinary skill in the art to combine the bellows of Naito with the structure of Hochberg to form a flexible inner pipe that has excellent heat barrier properties and resistance to harsh chemicals.

Response to Arguments

3. Applicant's arguments filed 09/02/2008 have been fully considered but they are not persuasive.

The applicant argues that the invention of Hochberg would be destroyed if the shaped bellows of Naito was included. Hochberg discloses that the invention is disclosed with conjunction to fuel lines and that the invention is applicable to other types of hollow bodies (col. 6 lines 21-25). Therefore, the invention is applicable to the flexible join for an exhaust system of Naito.

The object of the fuel line of Hochberg is to provide a light weight hollow body which seals itself after being penetrated by a foreign object (col. 1 lines 59-61). However, the structure and construction of the fuel line is very similar to that of applicant and it would be obvious to make the modification of having a bellows shaped inner

metal layer to allow for a more flexible tube while still maintaining the integrity of the mechanical properties and fuel resistant properties.

Conclusion

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ELLEN S. WOOD whose telephone number is (571)270-3450. The examiner can normally be reached on Monday-Friday 7-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on 571-272-1284. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ellen S Wood
Examiner
Art Unit 1794

/Carol Chaney/
Supervisory Patent Examiner, Art Unit 1794